



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,233	08/20/2003	Satoshi Masumi	5405-5	6472

7590 09/26/2005

COHEN, PONTANI, LIEBERMAN & PAVANE  
Suite 1210  
551 Fifth Avenue  
New York, NY 10176

EXAMINER

MRUK, GEOFFREY S

ART UNIT	PAPER NUMBER
----------	--------------

2853

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/644,233

Applicant(s)

MASUMI, SATOSHI

Examiner

Geoffrey Mruk

Art Unit

2853



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12, 14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/15/04, 5/10/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 9 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Fartash (US 6,942,318 B2).

With respect to claim 9, Fartash discloses a recording head comprising (Fig. 6, element 602): a plurality of nozzles (Fig. 5, element 534) for jetting ink, wherein a jetting opening of each nozzle, from which the ink is jetted (Column 9, lines 38-51), has a diameter of not less than 12 $\mu$ m and not more than 22 $\mu$ m (Column 3, lines 45-50).

With respect to claim 11, Fartash discloses a supply opening side (Fig. 1a, element 131) of each nozzle (Fig. 1a, element 130), to which the ink is supplied, differs from a jetting opening side (Fig. 1a, element 132) of each nozzle in an angle of an inner circumferential surface of the nozzle with respect to a center line of the nozzle (Column 4, lines 59-65).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 and 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fartash (US 6,942,318 B2) in view of Carlson et al. (US 6,534,128 B1).

With respect to claim 1, the primary reference of Fartash discloses an ink jet printer (Fig. 6) comprising: a recording head (Fig. 6, element 602) on which a plurality of nozzles (Fig. 5, element 534) for jetting ink are arranged; and a feeding member (Fig. 6, element 682) for feeding a recording medium (Fig. 6, element 678), wherein an image is recorded by jetting the ink from the nozzles of the recording head to the recording medium fed by the feeding member (Column 9, lines 38-51); wherein a jetting opening of each nozzle, from which the ink is jetted, has a diameter of not less than 12 $\mu$ m and not more than 22 $\mu$ m (Column 3, lines 45-50).

With respect to claim 3, the primary reference of Fartash discloses a supply opening side (Fig. 1a, element 131) of each nozzle (Fig. 1a, element 130), to which the ink is supplied, differs from a jetting opening side (Fig. 1a, element 132) of each nozzle in an angle of an inner circumferential surface of the nozzle with respect to a center line of the nozzle (Column 4, lines 59-65).

With respect to claim 4, the primary reference of Fartash discloses the jetting opening (Fig. 1a, element 130).

With respect to claim 5, 6, and 7, the primary reference of Fartash discloses the ink (Column 1, lines 18-31).

With respect to claim 8, the primary reference of Fartash discloses an image recording method comprising forming an image by jetting ink to a recording medium (Column 9, lines 38-51).

However the primary reference of Fartash fails to disclose:

- With respect to claim 1, the ink substantially includes no volatile component,
- With respect to claim 4, a head a head temperature adjusting mechanism arranged in the neighborhood of the jetting opening, for adjusting a temperature of the ink at the jetting opening to not less than 30°C,
- With respect to claim 5, a viscosity of the ink is not less than 20 mPa.s and not more than 200 mPa.s at 25°C, and the viscosity of the ink is not less than 8 mPa.s and not more than 30 mPa.s when the ink is jetted from each nozzle,
- With respect to claim 6, the ink includes an active energy ray curable compound, and
- With respect to claim 7, an active energy ray radiating member for radiating an active energy ray to the recording medium to which the ink is jetted from the nozzle, in order to harden the active energy ray curable compound.

The secondary reference of Carlson discloses radiation curable printing inks (Column 2, lines 45-54) where:

- With respect to claim 1, the ink substantially includes no volatile component (claim 1),
- With respect to claim 4, a head a head temperature adjusting mechanism arranged in the neighborhood of the jetting opening, for adjusting a temperature of the ink at the jetting opening to not less than 30°C (Column 4, lines 54-67, i.e. desired print head temperature),
- With respect to claim 5, a viscosity of the ink is not less than 20 mPa.s and not more than 200 mPa.s at 25°C (Column 4, lines 38-60), and the viscosity of the ink is not less than 8 mPa.s and not more than 30 mPa.s when the ink is jetted from each nozzle (Column 4, lines 56-60),
- With respect to claim 6, the ink includes an active energy ray curable compound (Column 5, lines 53-67;Column 6, lines 1-54), and
- With respect to claim 7, an active energy ray radiating member for radiating an active energy ray to the recording medium to which the ink is jetted from the nozzle, in order to harden the active energy ray curable compound (Column 5, lines 53-67;Column 6, lines 1-54).

Although Carlson does not explicitly disclose an active energy ray radiating member, one would necessarily be present in order to cure the ink composition.

At the time of the invention, it would have been obvious to use the ink compositions of Carlson in the chamber of Fartash. The motivation for doing so would

have been "The viscosity characteristics of the compositions are low enough so that conventional solvent is not required in order to satisfy the requisite low ink jet viscosity specifications" (Column 2, lines 45-54).

2. Claims 12, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fartash (US 6,942,318 B2) in view of Carlson et al. (US 6,534,128 B1).

With respect to claim 12, the primary reference of Fartash discloses the jetting opening of the nozzle (Fig. 1a, element 130).

With respect to claim 14, the primary reference of Fartash discloses ink for an inkjet printer (Column 9, lines 38-51).

With respect to claim 15, the primary reference of Fartash discloses ink (Column 9, lines 38-51).

However the primary reference of Fartash fails to disclose:

- With respect to claim 12, a head temperature adjusting mechanism arranged in the neighborhood of the jetting opening of the nozzle, for adjusting a temperature of the ink at the jetting opening to not less than 30°C,
- With respect to claim 14, color material, wherein the ink substantially includes no volatile components, and wherein a viscosity of the ink is not less than 20 mPa.s and not more than 200 mPa.s at 25°C, and the viscosity of the ink is not less than 8 mPa.s and not more than 30 mPa.s when the ink is jetted from a nozzle of the ink jet printer, and

Art Unit: 2853

- With respect to claim 15, the ink includes an active energy ray curable compound.

The secondary reference of Carlson discloses radiation curable printing inks (Column 2, lines 45-54) where:

- With respect to claim 12, a head temperature adjusting mechanism arranged in the neighborhood of the jetting opening of the nozzle, for adjusting a temperature of the ink at the jetting opening to not less than 30°C (Column 4, lines 54-67, i.e. desired print head temperature),
- With respect to claim 14, color material (Column 1, lines 43-54), wherein the ink substantially includes no volatile components (claim 1), and wherein a viscosity of the ink is not less than 20 mPa.s and not more than 200 mPa.s at 25°C (Column 4, lines 38-60), and the viscosity of the ink is not less than 8 mPa.s and not more than 30 mPa.s when the ink is jetted from a nozzle of the ink jet printer (Column 4, lines 56-60), and
- With respect to claim 15, the ink includes an active energy ray curable compound (Column 5, lines 53-67; Column 6, lines 1-54).

Although Carlson does not explicitly disclose an active energy ray radiating member, one would necessarily be present in order to cure the ink composition.

At the time of the invention, it would have been obvious to use the ink compositions of Carlson in the chamber of Fartash. The motivation for doing so would have been "The viscosity characteristics of the compositions are low enough so that



conventional solvent is not required in order to satisfy the requisite low ink jet viscosity specifications" (Column 2, lines 45-54).

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fartash (US 6,942,318 B2) in view of Katakura et al. (US 6,827,423 B1).

With respect to claim 10, the primary reference of Fartash discloses the ink jetted from the nozzle (Column 9, lines 38-51).

However the primary reference of Fartash fails to disclose a volume of a drop of the ink jetted from the nozzle is not less than 1 pico-liter and not more than 6 pico-liter.

The secondary reference of Katakura discloses a liquid jetting apparatus where "the small ink droplet 44b is arranged to have a volume of about 3 picoliter to 20 picoliter in spite of the value being varied according to the permeability of ink, the type of the recording paper 13 or the recording mode" (Column 14, lines 57-64).

At the time of the invention, it would have been obvious to use the method of driving the liquid jetting apparatus of Katakura in the chamber of Fartash. The motivation for doing so would have been to "development of a small-size recording head which is capable of discharging plural types of ink having different physical properties, including the permeation" (Column 1, lines 46-52).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fartash (US 6,942,318 B2) in view of Carlson et al. (US 6,534,128 B1) as applied to claim 1 above, and further in view of Katakura et al. (US 6,827,423 B1).

Fartash and Carlson references disclose all the limitations of the ink jet printer except the volume of a drop of the ink jetted from the nozzle is not less than 1 pico-liter and not more than 6 pico-liter.

The tertiary reference of Katakura discloses a liquid jetting apparatus where "the small ink droplet 44b is arranged to have a volume of about 3 picoliter to 20 picoliter in spite of the value being varied according to the permeability of ink, the type of the recording paper 13 or the recording mode" (Column 14, lines 57-64).

At the time of the invention, it would have been obvious to use the method of driving the liquid jetting apparatus of Katakura in the chamber of Fartash. The motivation for doing so would have been to "development of a small-size recording head which is capable of discharging plural types of ink having different physical properties, including the permeation" (Column 1, lines 46-52).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2853

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM  
9/21/2005

  
9/23/05

**MANISH S. SHAH**  
**PRIMARY EXAMINER**